

CLAIMS

1. A solid state image pickup apparatus comprising
a photodetecting device and one or more thin
film transistors connected to said photodetecting
5 device are formed in one pixel, a part of said
photodetecting device is formed over at least a part
of said thin film transistor, and
said thin film transistor comprises a source
electrode, a drain electrode, a first gate electrode,
10 and a second gate electrode arranged on the side
opposite to said first gate electrode with respect to
the source electrode and the drain electrode.
2. A solid state image pickup apparatus according
15 to claim 1, wherein
said thin film transistor is a double gate type
thin film transistor comprising at least the first
gate electrode, an insulating layer, a semiconductor
layer, a semiconductor layer having a impurity doped ,
20 the source and drain electrodes, an insulating layer,
and the second gate electrode which are sequentially
formed onto an insulating substrate.
3. A solid state image pickup apparatus according
25 to claim 1 or 2, wherein
said second gate electrode covers at least a
part of a gap portion between said source electrode

and said drain electrode.

4. A solid state image pickup apparatus according to any one of claims 1 to 3, wherein

5 either said source electrode or said drain
electrode is connected to a transfer wiring connected
to a signal processing circuit, and said second gate
electrode does not two-dimensionally overlap either
the source electrode or the drain electrode connected
10 to said transfer wiring.

5. A solid state image pickup apparatus according to any one of claims 1 to 4, wherein

 said second gate electrode and said first gate
15 electrode are connected to one gate driver circuit by
a gate wiring and controlled by said gate driver
circuit.

6. A solid state image pickup apparatus according
20 to any one of claims 1 to 5, wherein

 said second gate electrode is formed as a film
simultaneously with an electrode material
constructing the photodetecting device.

25 7. A solid state image pickup apparatus according to any one of claims 1 to 6, wherein

 said photodetecting device is constructed by at

least an insulating layer, a semiconductor layer, and a semiconductor layer having a impurity doped c.

8. A solid state image pickup apparatus according
5 to any one of claims 1 to 6, wherein

said photodetecting device is constructed by at least a first semiconductor layer having a impurity doped , a semiconductor layer, and a second semiconductor layer having a impurity doped of a
10 conductivity type opposite to that of said first semiconductor layer having a impurity doped .

9. A radiation image pickup apparatus wherein
said photodetecting device of the solid state
15 image pickup apparatus according to any one of claims 1 to 6 is a radiation detecting device for directly and photoelectrically converting a radiation.

10. A radiation image pickup apparatus wherein
20 a wavelength converter is arranged onto said photodetecting device of the solid state image pickup apparatus according to any one of claims 1 to 8.